

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

*File*

SUBJECT: <sup>Phase I</sup> Final Report - Sampling and Analysis of Well  
Water Samples Collected at Artesian Water Company,  
Llangollen Wellfield and Amoco Chemical Company

DATE: June 1, 1977

FROM: Victor Guide (3SA21) *Ume*  
Civil Engineer, Annapolis Field Office

ORIGINAL  
(Red)

TO: Larry S. Miller (3SA60)  
Chief, Water Quality Monitoring Branch

THRU: Orterio Villa Jr. (3SA20) *AV*  
Director, Annapolis Field Office

At the request of the Water Supply Branch, water samples were collected on May 19, 1977 from two (2) Amoco Chemical Company Wells, four (4) Artesian Water Company Wells, one (1) Finished Water Station at the Artesian Water Company, one (1) Test Well from the Llangollen Landfill and one (1) New Castle County Recovery Well. Details of the sampling program are as follows:

LOCATION: Artesian Water Company  
Llangollen Wellfield and  
Amoco Chemical Company

SOURCE REPRESENTATIVES: Artesian Water Company - James Harrington  
Amoco Chemical Company - Albert Smith

STATE OF DELAWARE REPRESENTATIVE: Ronald Stauffer

EPA REPRESENTATIVES: Charles Kleeman, Water Supply Branch  
Victor Guide, Annapolis Field Office  
Ronald Jones, Annapolis Field Office

DATE/TIME OF ARRIVAL: at Amoco Chemical Company - 0930  
at Artesian Water Company - 0930

SAMPLING:	Date	Time	Location
	5/19/77	0855	Amoco Chemical Company, Well #PW-1
	5/19/77	0905	Amoco Chemical Company, Well #PW-3
	5/19/77	0930	Artesian Water Company, Finished Water
	5/19/77	0940	Artesian Water Company, Well #7
	5/19/77	0945	Artesian Water Company, Well #2
	5/19/77	1005	Artesian Water Company, Well #6-3
	5/19/77	1035	New Castle County Recovery Well #RW-3
	5/19/77	1100	Artesian Water Company, Midvale #1
	5/19/77	1130	Llangollen Landfill, Well #S-1

*Sent*  
cc. Paul Ambrose  
Jim Manning  
Al Montague  
6/15/77

ORIGINAL  
(Red)

2

At each of these stations samples were collected in triplicate using prewashed, muffled, 50 ml serum bottles with zero-dead volume and Teflon faced septum. Each sample was analyzed for the following organic parameters:

- |                    |                        |
|--------------------|------------------------|
| (1) Acetone        | (6) Hexane - 1         |
| (2) Benzene        | (7) Methyl Pentane     |
| (3) Chlorobenzene  | (8) Methylene Chloride |
| (4) Chloroform     | (9) N-Hexane           |
| (5) Dichloroethane | (10) Toluene           |

Analyses of the well water samples was conducted by the Annapolis Field Office, the Environmental Monitoring and Support Laboratory - Cincinnati, and by Dr. Foppe De Walle, Stanford University. Results from AFO and EMSL are summarized as follows (see attachments for laboratory reports from chemists who did VOA):

#### Annapolis Field Office

Samples were analyzed by direct aqueous injection and Pentane extraction. All requested organic parameters were run on all samples except dichloroethane. No standards were available for this compound at AFO according to Dr. Thomas Munson (this parameter was included in the EMSL analyses and results were negative). None of the suspect compounds were found in any of the samples except for trace chlorobenzene in the Llangollen Landfill Well Sample S-1. Three of the wells (PW-3, RW-3 and S-1) did contain one unidentified large peak. As soon as the Tekmar is in operation these three samples will be rerun and an attempt will be made to identify these peaks.

#### EMSL - Cincinnati

Samples were analyzed by the generalized GC/MS inert gas purge and trap procedure as described in Chapter 3 of the draft GC/MS Manual. All requested organic parameters were run on station Amoco PW-1, Amoco PW-3, Artesian Finished Water, Artesian Well #7, Artesian Well #2 and Artesian Well #G-3. None of suspect compounds (detection limits in the range of 1-10 µg/l) were found in any of these samples by EMSL.

Enclosure

cc: J.G. Gardner  
C. Kleeman

VGuide:ram:3752:6/6/77

AR100422

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

SUBJECT: Preliminary Report on Llangollen Landfill  
Samples

DATE: May 31, 1977

FROM: James Barron *JB*

ORIGINAL  
(Red)

TO: Orterio Villa, Jr.

THRU: T. O. Munson *Tom*  
James W. Marks *JW*

An additional group of samples were taken at the Llangollen Landfill. The samples were analyzed by direct aqueous injection and Pentane extraction. Standards were available for all the compounds requested except dichloroethane.

<u>Sample #</u>	<u>Location</u>	<u>Compounds Detected</u>
77051901	Amoco PW-1	None on list detected
77051902	Amoco PW-3	None on list detected, one large peak, retention time doesn't match anything
77051903	Artesian, finished water	None on list detected
77051904	Artesian Well #7	None on list detected
77051905	Artesian Well #2	None on list detected
77051906	Artesian Well G-3	None on list detected
77051907	Llangollen RW-3	None on list detected, unidentified large peak
77051908	Llangollen Midvale #1	None on list detected
77051909	Llangollen S-1	Trace chlorobenzene, one other large unidentified peak

As soon as our gas sparging apparatus (Tekmar) is in operation we will rerun Wells PW-3, RW-3, and S-1 to try and identify the peaks seen in those samples.

JBarron:jr:3752:5/31/77

AR100423

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Field  
Report

SUBJECT: Sampling at Artesian Water Company, Llangollen  
Wellfield and Amoco Chemical Company

DATE: May 20, 1977

FROM: Victor Guide (3SA21) *U.i*  
Civil Engineer, Annapolis Field Office

ORIGINAL  
(R.C.)

TO: Larry S. Miller (3SA60)  
Chief, Water Quality Monitoring Branch

THRU: Orterio Villa Jr. (3SA20)  
Director, Annapolis Field Office

At the request of the Water Supply Branch, water samples were collected on May 19, 1977 from two (2) Amoco Chemical Company Wells, five (5) Artesian Water Company Wells, one (1) Finished Water Station at the Artesian Water Company and one (1) Test Well from the Llangollen Land-fill. Three of these sampling locations were not in the original plan as outlined in the memo dated May 17, 1977 regarding survey objectives. These three stations (Artesian #RW-3, Artesian Midvale #1 and Llangollen #S-1) were last minute suggestions by Dr. Foppe B. DeWalle, Stanford University. Dr. DeWalle accompanied the EPA/State of Delaware team and took samples at each station using his own sample bottles. The AFO crew took a duplicate set of samples from each of the originally planned stations (Amoco Chemical Company Wells #PW-1 and #PW-3; Artesian Water Company Wells #7, #2, and #G-3; and a Finished Water Station). One set of these samples was shipped to Dr. William Budde, EMSL, via TWA Flight #543 from Philadelphia at 1230 on May 19, 1977. One set of samples were delivered to AFO via government vehicle on May 19, 1977 at 1415. Water samples from #RW-3, Artesian Midvale #1 and Llangollen #S-1 were taken by AFO and Dr. DeWalle. These samples were not shipped to EMSL - only AFO received these samples.

Further details of the sampling program are as follows:

LOCATION: Artesian Water Company  
Llangollen Wellfield and  
Amoco Chemical Company

SOURCE REPRESENTATIVES: Artesian Water Company - James Harrington  
Amoco Chemical Company - Albert Smith

STATE OF DELAWARE REPRESENTATIVE: Ronald Schofer

EPA REPRESENTATIVES: Charles Kleeman, Water Supply Branch  
Victor Guide, Annapolis Field Office  
Ronald Jones, Annapolis Field Office

DATE/TIME OF ARRIVAL: at Amoco Chemical Company - 0830  
at Artesian Water Company - 0930

AR100424

ORIGINAL  
(Red)

7

SAMPLING:	<u>Date</u>	<u>Time</u>	<u>Location</u>
	5/19/77	0855	Amoco Chemical Company, Well #PW-1
	5/19/77	0905	Amoco Chemical Company, Well #PW-3
	5/19/77	0930	Artesian Water Company, Finished Water
	5/19/77	0940	Artesian Water Company, Well #7
	5/19/77	0945	Artesian Water Company, Well #2
	5/19/77	1005	Artesian Water Company, Well #G-3
	5/19/77	1035	Artesian Water Company, Well #RW-3*
	5/19/77	1100	Artesian Water Company, Midvale #1*
	5/19/77	1130	Llangollen Landfill, Well #S-1**

At each of these stations samples were collected in triplicate using pre-washed, muffled, 50 ml serum bottles with zero-dead volume and Teflon faced septum. Each sample will be analyzed for the following organic parameters:

(1) Acetone	(5) Dichloroethane	(9) N-Hexane
(2) Benzene	(6) Hexane - 1	(10) Toluene
(3) Chlorobenzene	(7) Methyl Pentane	
(4) Chloroform	(8) Methylene Chloride	

\* These stations were not in the original plan; samples from these stations were delivered only to AFO.

\*\* Samples were obtained with a bailer operative by Ron Schofer - the well was "bailed" twenty times (2 gallons per bail) prior to sampling.

Upon completion of VOA a final report will be prepared.

cc: J. Gary Gardner  
Thomas O. Munson  
Charles Kleeman

Enclosure

AR100425

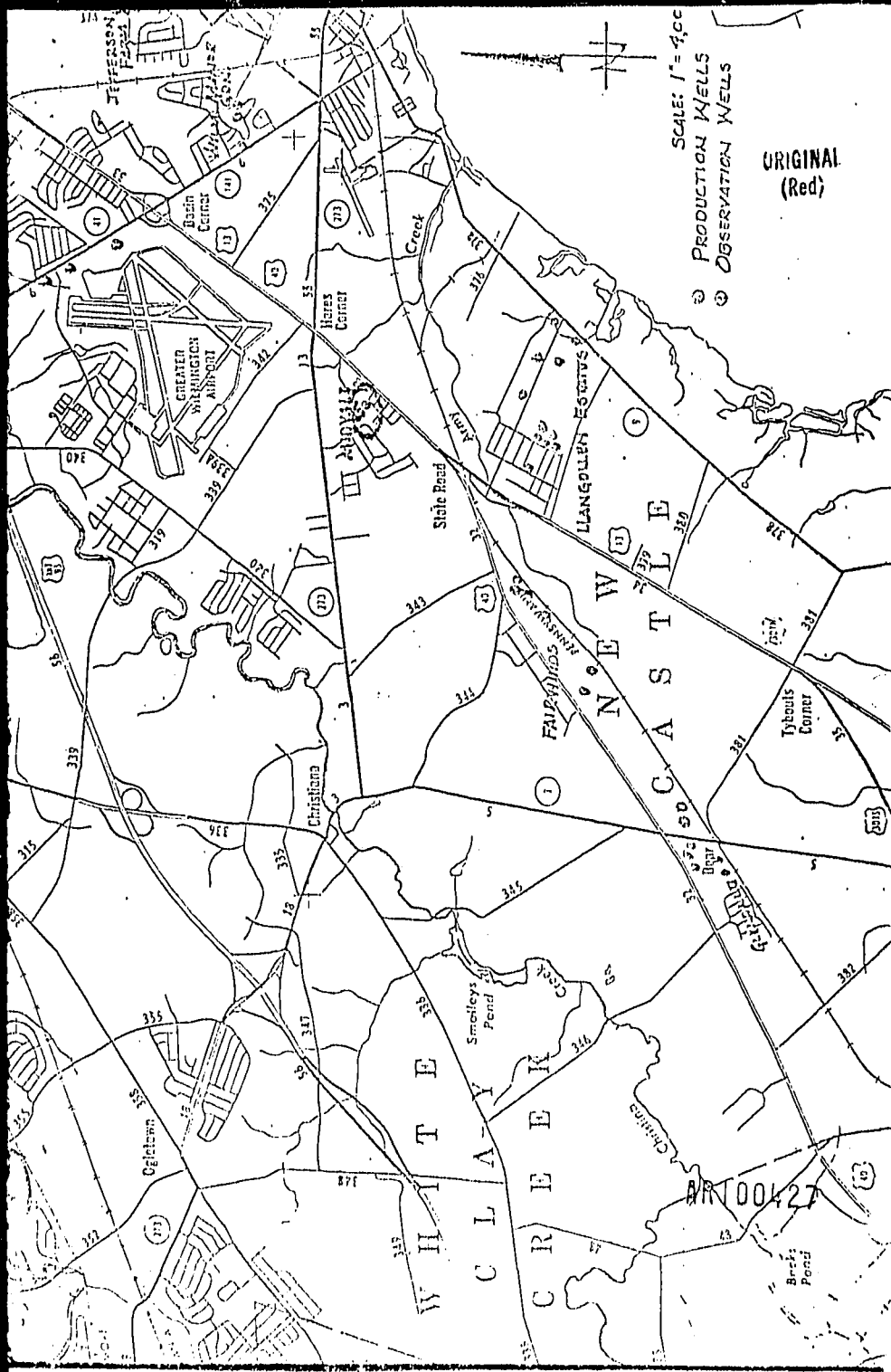
ORIGINAL.  
(Red)

FINISHED  
STATION

**पुनर्वसन**

1 1/2" 4" 6"

AR100426



SCALE: 1"=400'  
● PRODUCTION WELLS  
○ OBSERVATION WELLS

ORIGINAL  
(Red)

ART 00427